

Attorney Docket No. 9342-101  
Application Serial No. 10/630,082  
Filed: July 30, 2003  
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### REMARKS

This response is submitted in reply to the Office Action mailed November 2, 2004 ("the Action"). Claims 1-27 are pending in the application. Claims 1-8, 11 and 27 stand rejected as anticipated by and/or obvious over U.S. Patent No. 5,555,449 to Kim ("Kim") alone or in view of one or more cited secondary references. Applicants respectfully disagree and will address the rejections below.

#### I. Allowed/Allowable Claims

Applicants acknowledge with appreciation, the Examiner's allowance of Claims 22-26 and the statement that Claims 9, 10 and 12-21 recite allowable subject matter and would be allowed if rewritten into independent form. Claims 9, 12, 14 and 21 have been amended to incorporate the subject matter of Claim 11 (their base claim). Claim 10 depends from Claim 9 and Claims 13, 15 and 16-20 depend from allowable claims. As such, Applicants submit that Claims 9, 10 and 12-21 are in condition for allowance.

#### II. The §102(b) Anticipation Rejections

The Action rejects Claims 1-2, 4-5, 11 and 27 as being anticipated by Kim. Applicants respectfully disagree. Kim proposes an extendible antenna 17. As shown in Figure 1 of Kim, the antenna 17 is an external side antenna that can be "readily rotated" to "operating position" (col. 2, lines 53-55). In addition, the speaker 4 is located above the display 11 and is not associated with nor located in an acoustic channel associated with the speaker 4. The acoustic channels 24, 26 proposed by Kim are associated with sound from a back-up noise picky-up cavity 21 and/or a curved speaking region 20. The acoustic channels 24, 26 are remote from the speaker 4 and the acoustic channels 26, 24 rotate with antenna 17. Claim 1 recites in-part:

an acoustic channel formed of substrate material, the acoustic channel having a wall with an enclosed space and an associated length and width, the acoustic channel adapted, during operation, to guide the output of a speaker to a target location; and

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an antenna that is integrated with the acoustic channel.

Claim 12 recites in-part:

(d) a speaker in communication with the acoustic channel, the acoustic channel adapted, during operation, to guide the output of the speaker to a desired location in the housing.

Claim 27 recites:

transmitting sound from a speaker in the wireless terminal to outside the wireless terminal via an acoustic channel that comprises an integrated antenna, the acoustic channel extending generally longitudinally beneath a generally planar printed circuit board and rising to direct the sound to exit out an aperture in the planar printed circuit board and out a front side of the wireless terminal.

The support member 16 of Kim is illustrated in Figure 2 with antenna 17 on an interior channel wall thereof, however, *Inter alia*, Applicants submit that the acoustic channels 24, 26 are not configured to guide the output of the speaker 4 to a target location (rather, Applicants submit that the acoustic channels 24, 26 are configured to direct the output of a microphone 41 to circuitry 36 via diaphragm 40). Therefore, for at least this reason, Kim does not anticipate Claims 1-8, 12 or 27.

### III. The §103 Obviousness Rejections

#### A. Claim 3

The Action goes on to reject Claim 3 as being obvious over Kim in view of U.S. Patent No. 6,496,149 to Birnbaum ("Birnbaum"). More particularly, the Action concedes that Kim fails to teach a dielectric resonant antenna, but concludes that one of skill in the art would have found it an "obvious design choice" to provide a dielectric resonant antenna as taught by Birnbaum "for the purpose of improving antenna gain". Applicants respectfully disagree.

First, Applicants submit that Birnbaum fails to resolve the deficiencies of Kim. Further, one of skill in the art would not have found it obvious to integrate a dielectric

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resonant antenna into an acoustic cavity that guides output from a speaker as the antenna can be somewhat restricted in form, operation and even gain.

#### B. Claims 6-8

Similarly, the Action rejects Claims 6-8 as being obvious over Kim in view of U.S. Patent No. 6,005,525 to Kivela (Kivela) and U.S. Patent No. 6,693,596 to Wakui (Wakui). Again, Applicants respectfully disagree.

The Action concedes that Kim fails to teach or suggest a PIFA, but states that Kivela (Figures 4-7) teaches same and concludes that it would have been an "obvious design choice" to provide a PIFA "for the purpose of providing radiation to the side of the ground plane is small" (citing col. 5, lines 17-35). Applicants respectfully disagree.

Kivela primarily proposes a wristband telephone. Kivela proposes placing an antenna in the cover for a conventional hand phone as shown in Figures 11 and 12 because "the effects of the hand and the head on the antenna are minimized"(col. 9, lines 25-35). Indeed, Kivela teaches away from placing a PIFA antenna in the body of the phone 118 because the "user's hands shades the antenna if a planar antenna is placed in such a way that it is in section 118 of the body" between the speaker 116 (at the top of the phone) and microphone 118 (located at the bottom of the phone) (col. 9, lines 28-30).

As such, Kivela teaches away from incorporating a PIFA antenna into an acoustic channel (much less one disposed in the primary body of the phone). Further, one of skill in the art would not have combined the rotatable external side antenna with the PIFA antenna of Kivela in a manner that would yield the instant invention, absent the teachings of the instant invention itself.

Wakui fails to resolve the deficiencies of the cited references. While it is true as a general premise that antennas are "frequency scaled for desired operation", one of skill in the art would not have found it obvious to provide an acoustic channel with an integrated antenna that has size and other design constraints not typical of conventional devices and that can operate at the claimed frequencies.

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#### IV. Supplemental Information Disclosure Statement (IDS)

Applicants have submitted a Supplemental IDS with a form PTO 1449 (including the corresponding PCT Search Report and references listed thereon). Return of the initialed form PTO 1449 indicating consideration of same is respectfully requested.

#### CONCLUSION

Accordingly, Applicant submits that the present application is in condition for allowance and the same is earnestly solicited. Should the Examiner have any small matters outstanding of resolution, he is encouraged to telephone the undersigned at 919-854-1400 for expeditious handling.

Respectfully submitted,

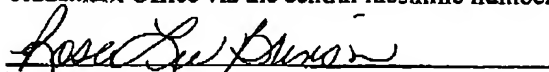


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#### CERTIFICATION OF FACSIMILE TRANSMISSION UNDER 37 CFR 1.8

I hereby certify that this correspondence is being facsimile transmitted to the Patent and Trademark Office via the central facsimile number 703-872-9306 on February 28, 2005.

  
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